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RCRA Section 3007 Survey of the Chlorinated Aliphatics Manufacturing Industry

INSTRUCTIONS

This RCRA Section 3007 questionnaire is being used to gather information about solid and hazardous waste management practices in the U.S. chlorinated aliphatics manufacturing industry. The Environmental Protection Agency requires this information in order to be able to determine whether or not certain waste streams should be managed as hazardous under the Resource Conservation and Recovery Act (RCRA), 42 USC 6901 et seq., and should be listed as such in the Code of Federal Regulations. Under Section 3007 of RCRA, 42 USC 6927, you are required to provide us with this information, except the optional information requested in Question 4.6 and all questions in Section 9. However, if you believe that some parts of the information supplied by you are commercially sensitive, you may claim protection for the data.

Responses may be typed or handwritten neatly. The signature/certification block should be completed by a senior official having authority over plant operations. It may not be completed by a consultant or any other third party.

The questionnaire consists of ten parts:

1. Corporate and facility information,

2. Types of chlorinated aliphatic products and chlorinated aliphatic intermediates manufactured at the facility,

3. Types of processes at the facility,

4. Solvent use during the manufacturing process,

5. Specific manufacturing processes; as well as the residuals generated,

6. Residuals characterization,

7. General residual management information,

8. Specific on-site residual management information,

9. Source reduction efforts (optional), and

10. Certification.

Confidentiality: You may make a business confidentiality claim by marking the appropriate data as `CBI' (Confidential Business Information). We must notify you if we intend to deny your claim, and you have the right to seek judicial review. Otherwise, we must protect the information from disclosure to anyone other than EPA and its authorized representatives, and may not release it under the Freedom of Information Act. It may be disclosed, however, to Congress or the Comptroller General of the United States at their request, or be released by order of a Federal Court. The complete regulations regarding confidential business information are given at 40 CFR Part 2 Subpart B.

Return the completed survey within 45 days from date of receipt to:

Wanda Levine (OS-333), Room SE-243A
Characterization and Assessment Division
Office of Solid Waste
U.S. Environmental Protection Agency
401 M St., S.W.
Washington, D.C. 20460
Telephone: (202) 260-7458

If you wish to claim all or part of your response as confidential, please send your response to Margaret Lee (OS-312), Room SE-264 at the address above.

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1. Corporate/Facility Data

1.1 Name of Corporation _____

1.2 Address of Corporation Headquarters

Street _____

City _____ State _____ Zip _____

Number of Corporate Employees _____

1.3 Name of Facility _____

1.4 Address of Facility

Street _____

City _____ State _____ Zip _____

Number of Facility Employees _____

1.5 Hazardous waste generator ID number: _____

POTW/NPDES Permit number: _____

Other environmental Permits: _____

1.6 Mailing Address of Facility (if different from above)

_____

1.7 Name(s) of personnel to be contacted for additional information pertaining to this questionnaire

Name	**Title**	**Telephone**

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2. Products Manufactured

2.1 In 1991 were chlorinated aliphatic[1] products or chlorinated aliphatic intermediates[2] manufactured at this facility?

_____ yes _____ no*

2.2 Indicate the common name and Chemical Abstracts chemical name for each chlorinated aliphatic product or chlorinated aliphatic intermediate manufactured at this facility. Please specify if the chemical is a product and/or intermediate.

Common Name	**Chemical Name**	**CAS number**	
_____	_____	_____	___ intermediate ___ product
_____	_____	_____	___ intermediate ___ product
_____	_____	_____	___ intermediate ___ product
_____	_____	_____	___ intermediate ___ product
_____	_____	_____	___ intermediate ___ product
_____	_____	_____	___ intermediate ___ product
_____	_____	_____	___ intermediate ___ product
_____	_____	_____	___ intermediate ___ product
_____	_____	_____	___ intermediate ___ product
_____	_____	_____	___ intermediate ___ product

**Note:* If chlorinated aliphatic products or chlorinated aliphatic intermediates are not manufactured at this facility, complete only Questions 1, 2.1, and 10 and return this questionnaire.

[1] For the purposes of this questionnaire, "chlorinated aliphatic" means a straight chain or cyclic compound containing 1 to 5 carbons, with varying amounts and locations of chlorinated substitution

[2] Definition of intermediate as excerpted from the Toxic Substances Control Source Book, December 12, 1977, Part 710 - Inventory Reporting of TSCA:

> "Intermediate means any chemical substance (1) which is intentionally removed from the equipment in which it is manufactured, and (2) which either is consumed in whole or in part in chemical reaction(s) used for the intentional manufacture of other chemical substance(s) or mixture(s)."

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3. Type of Facility Processes

3.1 Please indicate the type of process used in the manufacture of each product using the codes shown in the list shown below. In addition, if the process used is catalyzed, specify the catalyst used.

Code	Process
A1.	Chlorination
A2.	Dehydrochlorination
A3.	Hydrochlorination
A4.	Chlorinolysis
A5.	Oxychlorination
A6.	Thermal Cracking
A7.	Combined Process (specify)
A8.	Other (specify)

1) Product _____ Process Code _____ Catalyst _____
2) Product _____ Process Code _____ Catalyst _____
3) Product _____ Process Code _____ Catalyst _____
4) Product _____ Process Code _____ Catalyst _____
5) Product _____ Process Code _____ Catalyst _____
6) Product _____ Process Code _____ Catalyst _____
7) Product _____ Process Code _____ Catalyst _____
8) Product _____ Process Code _____ Catalyst _____
9) Product _____ Process Code _____ Catalyst _____
10) Product _____ Process Code _____ Catalyst _____

3.2 On-site Wastewater Treatment

3.2.1 Are process and treatment residuals treated at an on-site wastewater treatment facility?

_____ yes _____ no

If yes, please identify and include these residuals in your response to Question 5.

3.2.2 Wastewater Disposition (check all that apply)

___ discharge to POTW ___ underground injection

___ NPDES discharge ___ other (specify)

3.3 Other Sources of Wastewater

3.3.1 Are there production processes other than chlorinated aliphatic manufacturing that contribute to the total wastewater load?

Yes __ No __

If yes, please include any wastewater characterization data available and fill out Table I below.

Table I: Response to Question 3.3.1

Product	**Process**	**Wastewater Volume**

4. Solvent Use During Manufacturing Process

Please complete Table II for any of the solvents listed below that are used as a solvent in the manufacture of chlorinated aliphatics. Please include only solvents used for their "solvent" properties -- that is, to solubilize (dissolve) or mobilize other constituents. Examples of such solvent use include degreasing, cleaning or fabric scouring, use as diluents, extractants, or reaction and synthesis media, or for similar uses (see 50 FR 53317, December 31, 1985). A chemical is not used as a solvent if it is used as a raw material (i.e., as a reactant or part of the formulation) and converted via chemical reaction to another chemical. Otherwise, if these chemicals are used during the manufacturing process, they should be reported in Table II. See Example I for an example for cyclohexanol use. Sections 4.1 through 4.5 describe the informational requirements of the corresponding columns in Table II.

Solvent	CAS Number
Acetonitrile	75-05-8
Allyl Chloride	107-05-1
Aniline	62-53-3
Benzyl Chloride	100-44-7
Bromoform	75-25-2
Cumene	98-82-8
Cyclohexanol	108-93-0
p-Dichlorobenzene	106-46-7
Diethylamine	109-89-7
1,4-Dioxane	123-91-1
Epichlorohydrin	106-89-8
2-Ethoxyethanol acetate	111-15-9
Ethylene dibromide	106-93-4
Ethylene oxide	75-21-8
Furfural	98-01-1
Isophorone	78-59-1
Methyl Chloride	74-87-3
2-Methoxyethanol	109-86-4
2-Methoxyethanol acetate	110-49-6
Phenol	108-95-2
Vinylidine chloride (1,1-dichoroethylene)	75-35-4

4.1 List the solvent name.

4.2 Describe the use of the solvent (see examples in the paragraph above).

4.3 Provide the name of the process and specific unit operation using the solvent from the process flow diagram.

4.4 Indicate the solvent consumption for the calendar year 1991 in gallons.

4.5 Indicate the solvent consumption for the calendar year 1992 in gallons.

4.6 **OPTIONAL**: Describe any actions the facility has taken to change the solvent consumption (e.g., switching to a new solvent, improved recovery operations, etc.). If you choose to respond, please include your response in Table XII provided in Question 9 - Source Reduction Efforts (pg. 43).

EXAMPLE I—Response to Question 4

Table II—Solvent Use

4.1 Solvent Name	4.2 Solvent Application	4.3 Name of process and unit operation using solvent	4.4 1991 Solvent Consumption (gal)	4.5 1992 Solvent Consumption (gal)
Cyclohexanol	Reactor Cleaning	Vinyl Chloride production	40,000	40,000

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Table II—Response to Question 4
Solvent Use

4.1 Solvent Name	4.2 Solvent Application	4.3 Name of process and unit operation using solvent	4.4 1991 Solvent Consumption (gal)	4.5 1992 Solvent Consumption (gal)

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5. Process Residual and Treatment Residual Information

This information will be used to address industry-wide variation in type and quantity of residuals generated. **Residuals include any process stream generated during the manufacture of a product which is not used as a raw material or principally sold as a commercial product.** Residuals include wastes from the treatment of process residuals, such as wastewater treatment or incineration. Residuals may be solids (e.g., spent carbon), sludges (still bottoms, sludges from wastewater treatment), liquids (e.g., wastewater), confined gases (e.g., gases that are containerized to facilitate disposal), and unconfined gases generated by the management of solid or liquid residuals (e.g., incinerator stack emissions) or unconfined gases containing condensable gases (e.g., vented light ends). Include "spent" solvents [e.g., solvents that have been used and are no longer fit for use without being regenerated, reclaimed or otherwise processed (50 FR 53317, December 31, 1985)], as well as residuals from solvent recovery.

For each unit process, provide a brief narrative process description and a general process block flow diagram. In addition, include a separate flow diagram showing any on-site wastewater treatment processes and include the current operating capacity as well as the design capacity. Include the information requested in Questions 5.1 through 5.4 in each flow diagram [see Examples II(a) and II(b)]. Provide the information requested in Questions 5.5 and 5.6 in an attachment (see Example III).

5.1 Identify the product process, intermediates, co-products, and by-products produced by the process.

5.2 Provide a block for each major unit operation (e.g., reactor, distillation, washer, filtration, air emission control, aeration lagoon, etc.) in the production process and in each residual management process.

5.3 Identify process inputs such as raw materials, catalysts, reagents, and solvents by chemical or common name or chemical formula, and indicate the point of introduction with arrows.

5.4 Assign a unique Residual Identification Number (RIN) to each of the following types of residuals and indicate its point of generation with an arrow (see Question 7.3 for a list of possible residuals):

a) Residuals generated by unit operations in the product process, including unit operations that produce/recover co-products, by-products and solvents; and

b) Final treatment residuals [i.e., residuals generated by physical, chemical (including incineration and other thermal treatment) or biological treatment that are not intermediate treatment residuals within a treatment chain].

When more than one process block flow diagram is provided (i.e., for multiple product processes), assign unique, sequential RINs to the residuals for each flow diagram.

5.5 If residuals from this product process are combined with the residuals from other product processes at this facility prior to treatment or disposal, identify the product process residual by RIN and specify the source of the other residuals using the codes provided in Question 7.3 on page 17.

5.6 For each product process provide the following information (see Example III):

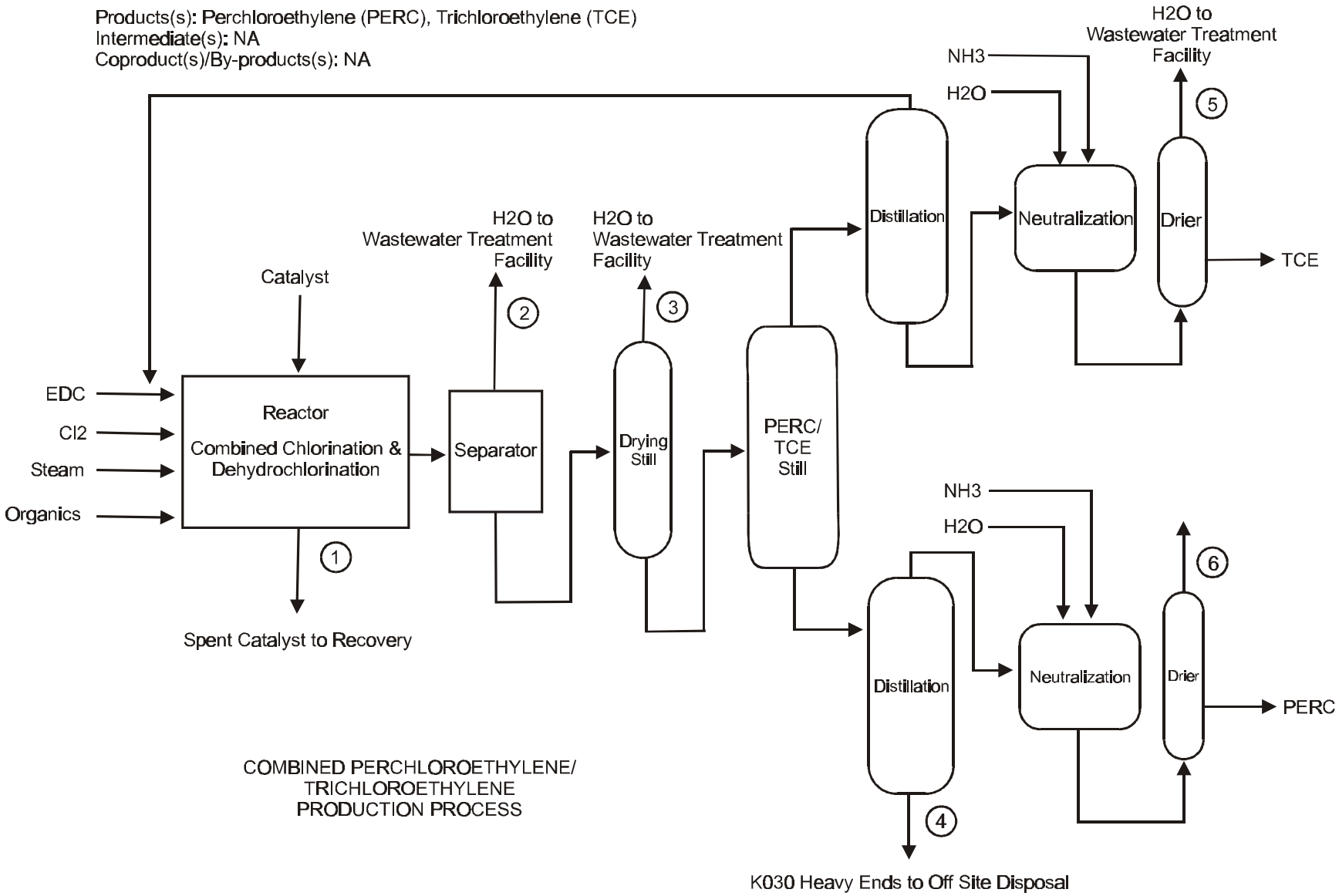
a) Indicate the typical annual production, the 1991[3] production, and specify the system capacity for each product, co-product and by-product.

[3] 1991 data are requested throughout this questionnaire (e.g., residual quantities, types, management methods, costs, etc.). If complete 1991 data are not available, please provide the most recent available data and specify its date or period.

b) For each product, co-product, and by-product provide the estimated cost of production (specify units), and provide what percent of that cost was used for waste management operations. If exact numbers are not available, please provide an estimated range for the data.

c) Provide the sales volume and price for each of any three quarters over the last three years for all chlorinated aliphatic products, co-products, and by-products manufactured.

EXAMPLE II(a)


Products(s): Perchloroethylene (PERC), Trichloroethylene (TCE)
Intermediate(s): NA
Coproduct(s)/By-products(s): NA
H2O to Wastewater Treatment Facility
NH3
H2O
5
Distillation
Neutralization
Drier
TCE
H2O to Wastewater Treatment Facility
2
H2O to Wastewater Treatment Facility
3
Catalyst
EDC
Cl2
Steam
Organics
Reactor
Combined Chlorination & Dehydrochlorination
Separator
Drying Still
PERC/ TCE Still
1
Spent Catalyst to Recovery
NH3
H2O
6
Distillation
Neutralization
Drier
PERC
4
K030 Heavy Ends to Off Site Disposal
COMBINED PERCHLOROETHYLENE/
TRICHLOROETHYLENE
PRODUCTION PROCESS

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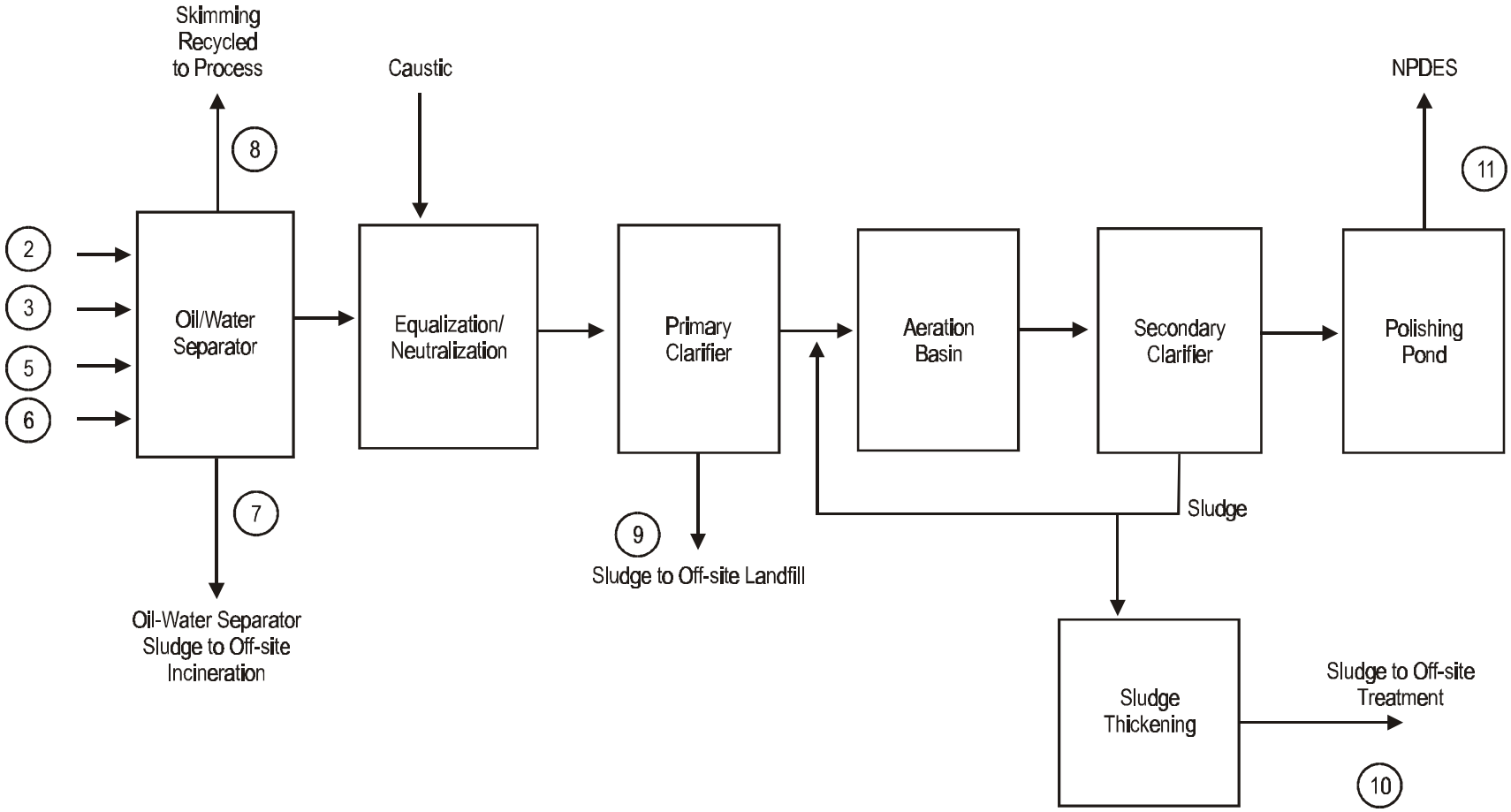
EXAMPLE II(b)

WASTEWATER TREATMENT FACILITY: PRODUCTION OF PERCHLOROETHYLENE AND TRICHLOROETHYLENE



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EXAMPLE III—Response to Questions 5.5 and 5.6

Product Process: Combined production of perchloroethylene and trichloroethylene

5.5 **Mixing of Chlorinated Aliphatic Production Residuals with Other Residuals**

RIN (from Flow Diagram)	Source of Other Residuals
7	Benzotrichloride production, C6

5.6.a **Annual Production**

Product:

Perchloroethylene	1,125,000 lbs (1991) 1,500,000 lbs (typical) 1,750,000 lbs (capacity)

Co-product/By-product:

Trichloroethylene	1,100,000 lbs (1991) 1,200,000 lbs (typical) 1,500,000 lbs (capacity)

5.6.b **Estimated cost of production per unit product, co-products, and by-products**.

Product/Co-product/By-product:	Estimated cost of production:
Perchloroethylene	$0.12 per pound (24.3% of the cost for waste management operations)
Trichloroethylene	$0.15 per pound (21.7% of the cost for waste management operations)

5.6.c **Provide the sales volume and price for any three quarters over the last three years for all chlorinated aliphatic products, co-products, and by-products manufactured.**

Product: Perchloroethylene

Quarter	**Sales Volume lbs.**	**Price per lb.**
First Quarter 1988	275,000	$0.17
Second Quarter 1989	255,000	$0.16
Third Quarter 1990	260,000	$0.18

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Co-product/By-product: Trichloroethylene

Quarter	Sales Volume lbs.	Price per lb.
First Quarter 1988	250,000	$0.20
Second Quarter 1989	225,000	$0.18
Third Quarter 1990	230,000	$0.19

6. Residuals Characterization Information

For each chlorinated aliphatics process identified in Question 5, complete Table III with the following information for every residual (see Example IV on the following page).

6.1 Identify the product process.

6.2 List each residual by Residual Identification Number (RIN). Include by-products and residuals generated from the treatment of process residuals as well as spent solvents, and still bottoms from solvent recovery.

6.3 If the residual has been identified in the facility RCRA notification, indicate whether it was identified as ignitable (I), corrosive (C), reactive (R), EP or TC toxic (E), or listed as hazardous waste by EPA. If the EPA hazardous waste number is known, give that number also (Fxxx, Kxxx, Pxxx, Uxxx). If EP or TC hazardous, please indicate the Dxxx codes which the waste exhibits. If the waste is not regulated as hazardous but is managed in hazardous waste management facilities in any case, please code as "AS" and provide an explanation of why it is managed as hazardous.

6.4 For each residual, describe the following properties: volatility, physical state [e.g., liquid (specify whether organic or aqueous), solid, slurry (indicate solids content), gas]; pH; flash point; BTU content; viscosity; toxicity.

6.5 List the compounds which are known by analysis to be present in the residual and specify the concentration of each. Please submit any available analytical data characterizing the residuals; submit both TCLP and total compositional data where possible.[4]

6.6 If residual analyses are not available, list the compounds which are expected to be present in the residual and estimated concentrations using best engineering and/or scientific judgment.

[4] Laboratory analysis of the residual is not required in order to respond to this question. If analytical data is available, please submit the results with the questionnaire.

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EXAMPLE IV—Response to Question 6
Table III

6.1 **Product Process**: Perchloroethylene/ Trichloroethylene

6.2 RIN: 1

6.3 RCRA Identification (I,C,R,E)	6.4 Properties of Residual
C	Ph 2
	organic liquid

6.5 **Residual Characterization**

Known Compounds	Total Concentration	TCLP Concentration
Perchloroethylene	225 ppm	
Trichloroethylene	610 ppm	
Ethylene dichloride	52 ppm	
Nickel	20%	

6.6 **Other Constituents**

Expected Compounds	Estimated Total Concentration	Estimated TCLP Concentration
Carbon Tetrachloride	50 ppm	
Vinyl Chloride	50 ppm	

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Table III—Response to Question 6

6.1 **Product Process**: _____ 6.2 RIN: _____

6.3 RCRA Identification (I,C,R,E)	6.4 Properties of Residual
_____	_____
	_____
	_____
	_____
	_____

6.5 **Residual Characterization**

Known Compounds	**Total Concentration**	**TCLP Concentration**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

6.6 **Other Constituents**

Known Compounds	**Estimated Total Concentration**	**Estimated TCLP Concentration**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

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7. Residuals Management/Disposal/Treatment Information—General

The following information pertains to management, disposal, and treatment methods applied on every residual generated by the process(es) identified in Question 5. Complete Table VI for every identified residual as shown in Example V (page 22).

7.1 Identify the product process.

7.2 Specify the Residual Identification Number (RIN).

7.3 Specify the residual category in accordance with codes provided.

Code	Categories of Residuals
C1.	Process precipitates or filtration residues and process sludges
C2.	Process decantates or filtrates
C3.	Treatment sludges: (specify) a. biological b. other
C4.	Spent activated carbon or other adsorbent (specify)
C5.	Spent Catalyst
C6.	Heavy ends: a. distillation residues b. miscellaneous heavy ends
C7.	Spent solvents
C8.	Untreated process wastewater: a. acid b. caustic c. neutral[1]
C9.	Treated wastewater discharge
C10.	Containers, liners, cleaning rags, spill pillows, gloves, etc.
C11.	Off-specification products and feedstock
C12.	Other (specify)
C13.	By-product
C14.	Light ends: a. condensable[2] b. noncondensable
C15.	Miscellaneous Wastewater a. equipment washdown b. boiler blowdown c. other non-process wastewater (specify)
C16.	Spent scrubber liquid a. aqueous b. organic/aqueous
C17.	Treated organic residual
C18.	Solids from treatment of other residuals
C19.	Filter cloths
C20.	Residuals contaminated with soil or debris (specify type - see Table IV)

[1] Acidic: pH < 2, Neutral: 2 ≤ pH ≤ 12, Caustic: pH>12
[2] Light ends are condensable if primarily composed of gases which are liquid at ambient temperature and pressure.

7.4 Specify residuals management/disposal/treatment methods in accordance with the codes provided. If a residual is subject to a sequence of methods (e.g., storage in a tank, incineration), list the methods in sequence. If a residual is handled alternatively by more than one method (e.g., either incinerated or burned in a boiler), identify the alternate methods.

Code	Management/Disposal/Treatment Methods
M1.	Storage in: a. tank b. container c. pile d. surface impoundment e. other (specify)
M2.	Treatment in: a. tank b. container c. surface impoundment d. pile e. other (specify)
M3.	Burning in a boiler or industrial furnace
M4.	Recovery/reclamation/reuse
M5.	Incineration
M6.	Landfill
M7.	Underground injection
M8.	On-site wastewater treatment in: a. tank b. surface impoundment c. container d. other (specify)
M9.	Discharge to publicly-owned wastewater treatment facility
M10.	Discharge to a surface water under NPDES
M11.	Discharge to off-site privately owned treatment works
M12.	Other (specify)
M13.	Scrubber: a. caustic b. water c. other (specify)
M14.	Flare
M15.	Land treatment/application/farming

Table IV: Specific Debris[5] Types for Residual Category C20

Code	Debris Type
01	Asbestos
02	Intact Batteries
03	Battery Cases
04	Bricks, Refractory
05	Bricks, Other
06	Ceramics
07	Cloth
08	Concrete
09	Electrical Wires, Switches, Etc.
10	Electronic Components
11	Equipment and Structures
12	Filter Cartridges
13	Glass
14	Metallics
15	Paper or Cardboard
16	Personal Protection Equipment
17	Plastics, Not Otherwise Specified
18	PVC Pipe
19	Rock or Other Non-Soil Geological Material
20	Rubber Objects
21	Slag
22	Wood

[5] For the purposes of this questionnaire, debris is defined in 57 FR 37222 (August 18, 1992), as:

"...solid material exceeding 60 mm (2.5 inch) particle size that is: (1) a manufactured object; or (2) plant or animal matter; or (3) natural or geologic material (e.g., cobbles and boulders), except that any material for which a specific treatment standard is provided in Subpart D, Part 268, is not debris."

7.5 Indicate units used for managing each type of waste. The treatment codes (Txxx) should be included for each management code. Also show whether these units are RCRA permitted units (HAZ), Non-hazardous units (NH), or exempt units (EX).

Management by technology — Treatment/Recovery Type

Code	System type
	Metals recovery (for reuse)
T011	High temperature metals recovery
T012	Retorting
T013	Secondary smelting
T014	Other metals recovery for reuse [e.g., ion exchange, reverse osmosis, acid leaching, etc. (specify in comments)]
T019	Metals recovery — type unknown
	Solvents recovery
T021	Fractionation/distillation
T022	Thin film evaporation
T023	Solvent extraction
T024	Other solvent recovery (specify in comments)
T029	Solvents recovery — type unknown
	Other recovery
T031	Acid regeneration
T032	Other recovery (e.g., waste oil recovery, nonsolvent organics recovery, etc. (specify in comments)
T039	Other recovery — type unknown
	Incineration
T041	Incineration — liquids
T042	Incineration — sludges
T043	Incineration — solids
T044	Incineration — gases
T049	Incineration — type unknown
	Energy recovery (reuse as fuel)
T051	Energy recovery — liquids
T052	Energy recovery — sludges
T053	Energy recovery — solids
T059	Energy recovery — type unknown
	Fuel blending
T061	Fuel blending
	Aqueous inorganic treatment
T071	Chrome reduction followed by chemical precipitation
T072	Cyanide destruction followed by chemical precipitation
T073	Cyanide destruction only
T074	Chemical oxidation followed by chemical precipitation
T075	Chemical oxidation only
T076	Wet air oxidation
T077	Chemical precipitation
T078	Other aqueous inorganic treatment [e.g., ion exchange, reverse osmosis, etc. (specify in comments)]
T079	Aqueous inorganic treatment — type unknown

Code	System type
	Aqueous organic treatment
T081	Biological treatment
T082	Carbon adsorption
T083	Air/steam stripping
T084	Wet air oxidation
T085	Other aqueous organic treatment (specify in comments)
T089	Aqueous organic treatment — type unknown
	Aqueous organic and inorganic treatment
T091	Chemical precipitation in combination with biological treatment
T092	Chemical precipitation in combination with carbon adsorption
T093	Wet air oxidation
T094	Other organic/inorganic treatment (specify in comments)
T099	Aqueous organic and inorganic treatment — type unknown
	Sludge treatment
T101	Sludge dewatering
T102	Addition of excess lime
T103	Absorption/adsorption
T104	Solvent extraction
T109	Sludge treatment — type unknown
	Stabilization
T111	Stabilization/chemical fixation using cementious and/or pozzolanic materials
T112	Other stabilization (specify in comments)
T119	Stabilization — type unknown
	Other treatment
T121	Neutralization only
T122	Evaporation only
T123	Setting/clarification only
T124	Phase separation (e.g., emulsion breaking, filtration) only
T125	Other treatment (specify in comments)
T129	Other treatment — type unknown

7.6 Indicate the annual quantity for every residual managed/disposed of/treated by each method in 1991 (specify units). Indicate the frequency of generation: generated continuously (C), periodically (P) (e.g., once a month), one-time generation (OT), or remedial action (R). If available, also provide the residual/production ratio. In addition, specify if the residual is managed along with other residuals or RCRA hazardous wastes (specify waste codes) and identify the other wastes and quantity co-managed.

7.7 Indicate whether the residual is managed/disposed of/treated on-site or off-site. If managed/disposed of/treated off-site, identify the site in the space provided in Table VII. Indicate whether the residual is managed as hazardous (HAZ) or non-hazardous (NH).

7.8 For residuals managed/disposed of/treated off-site, except for discharges to a POTW or surface water under a NPDES permit, indicate the average transportation cost per unit quantity of residual in 1991.

7.9 For residuals managed/disposed of/treated off-site, except for discharges to a POTW or surface water under a NPDES permit, indicate the average management/disposal/treatment/ cost per unit quantity of residual in 1991 and supply the names and addresses of off-site facilities in Table VII.

7.10 Indicate planned changes in residual management methods by specifying the code(s) for the new management method (e.g., M2-C from Question 7.4 on pg 17) and treatment/recovery type code(s) (e.g., T072 from Question 7.5 on pg 19) and indicate the anticipated date of change. Also provide information on any changes you foresee in future generation or management.

7.11 In Table V, please provide the following information regarding treatment or recovery systems identified in Question 7.5 for managing the residuals:

> Describe any special limitations (chemical or physical constraints) of the system (e.g., seasonality of operation, pumpability of residuals being managed, water content of waste, etc.) and any special materials handling problems in managing the residuals, contaminated soil or debris in this system (e.g., is grinding or shredding required prior to treatment?)

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Table V—Response to Question 7.11

Treatment Code	Description of limitations/handling problems

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EXAMPLE V — Response to Question 7
Table VI

7.1 Product Process: Perchloroethylene/Trichloroethylene

7.2 RIN	7.3 Residual Code	7.4 Management Code	7.5 Treatment/ Recovery Codes	7.6 1991 Residual Quantities (specify units)	7.7 On-site or Off-site Management	7.8 1991 Costs for Transportation Off-site (cost/quantity)	7.9 1991 Costs for Off-site Management (cost/quant)	7.10 Planned Changes in Management/Treatment/ Recovery Methods Code/Date
1	C5	M4a	T019	1000 lbs	off-site - H	$2.50/lb	$10/lb	none
2	C8a	M8a M10	T032 (organic phase recovery from oil/H20 separation) T081	20,000 gal	on-site - NH	N/A	N/A	add carbon adsorption (T082) in Spr. 1993
3	C8a	M8a M10	T032 (organic phase recovery from oil/H20 separation) T081	1,000 gal	on-site - NH	N/A	N/A	add carbon adsorption (T082) in Spr. 1993

Table VI — Response to Question 7

7.1 Product Process: _____

7.2 RIN	7.3 Residual Code		7.4 Management Code	7.5 Treatment/ Recovery Codes		7.6 1991 Residual Quantities (specify units)		7.7 On-site or Off-site Management	7.8 1991 Costs for Transportation Off-site (cost/quantity)		7.9 1991 Costs for Off-site Management (cost/quant)	7.10 Planned Changes in Management/Treatment/ Recovery Methods Code/Date

copy as needed

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Table VII — Response to Question 7.9

Use additional paper if necessary.

Name of Facility: _____
Residual Identification Numbers: _____

Facility Mailing Address:
Street or P.O. Box: _____
City or Town: _____
State: _____ Zip: _____
Facility Location (if different from above):
Street, Route Number or Other Specific Identifier:
City or Town: _____
State: _____ Zip: _____
Hazardous Waste Facility I.D. Number (if any):
Physical/chemical limitations imposed by treater(if any):
Management Code _____ (from Question 7.4)
Treatment/Recovery Code _____ (from Question 7.5)

Name of Facility: _____
Residual Identification Numbers: _____

Facility Mailing Address:
Street or P.O. Box: _____
City or Town: _____
State: _____ Zip: _____
Facility Location (if different from above):
Street, Route Number or Other Specific Identifier:
City or Town: _____
State: _____ Zip: _____
Hazardous Waste Facility I.D. Number (if any):
Physical/Chemical limitations imposed by treater(if any):
Management Code _____ (from Question 7.4)
Treatment/Recovery Code _____ (from Question 7.5)

Name of Facility: _____
Residual Identification Numbers: _____

Facility Mailing Address:
Street or P.O. Box: _____
City or Town: _____
State: _____ Zip: _____
Facility Location (if different from above):
Street, Route Number or Other Specific Identifier:
City or Town: _____
State: _____ Zip: _____
Hazardous Waste Facility I.D. Number (if any):
Physical/chemical limitations imposed by treater(if any):
Management Code _____ (from Question 7.4)
Treatment/Recovery Code _____ (from Question 7.5)

Name of Facility: _____
Residual Identification Numbers: _____

Facility Mailing Address:
Street or P.O. Box: _____
City or Town: _____
State: _____ Zip: _____
Facility Location (if different from above):
Street, Route Number or Other Specific Identifier:
City or Town: _____
State: _____ Zip: _____
Hazardous Waste Facility I.D. Number (if any):
Physical/Chemical limitations imposed by treater(if any):
Management Code _____ (from Question 7.4)
Treatment/Recovery Code _____ (from Question 7.5)

copy as needed

8. Specific On-site Residuals Management/Disposal/Treatment Information

If residuals identified in Question 5 are managed on-site by the following methods listed below, provide the information specified in the appropriate subheading on the following pages.

8.1	Storage or Treatment in Tanks	8.6	Land Treatment
8.2	Storage or Treatment in Containers	8.7	Surface Impoundments
8.3	Storage or Treatment in Piles	8.8	Landfills
8.4	Burning in a Boiler or Industrial Furnace	8.9	Deep Well Injection
8.5	Incineration		

8.a Are ground-water monitoring data available? Yes __ No __

8.b Are geologic or hydrogeologic data available? Yes __ No __

8.c In what manner is the land surrounding the facility used (e.g., food farming, wetlands, other industries, rangeland, etc.)?

_____

8.d List the type and distance of the two closest bodies of water to the facility (e.g., stream — 50 ft from facility, lake — 2 miles from facility, etc.)

_____

_____

8.1 Storage or Treatment in Tanks

Have identified residuals been stored or treated in on-site tanks at any time in 1991 (or most recent data)? Yes __ No __

If yes, provide the following information for the 10 largest tanks:

Tank	RIN	Design Capacity[1]	Storage or Treatment (specify)	Type of Treatment/ Recovery Used[2]	Avg. Length of Storage	Cost[3]	Part of Wastewater Treatment Train[4] (Circle Yes/No)	Covered (Circle Yes/No)	Secondary Containment[5] (Circle Yes/No)
1	__	_____	_____	_____	_____	_____	Yes No	Yes No	Yes No
2	__	_____	_____	_____	_____	_____	Yes No	Yes No	Yes No
3	__	_____	_____	_____	_____	_____	Yes No	Yes No	Yes No
4	__	_____	_____	_____	_____	_____	Yes No	Yes No	Yes No
5	__	_____	_____	_____	_____	_____	Yes No	Yes No	Yes No
6	__	_____	_____	_____	_____	_____	Yes No	Yes No	Yes No
7	__	_____	_____	_____	_____	_____	Yes No	Yes No	Yes No
8	__	_____	_____	_____	_____	_____	Yes No	Yes No	Yes No
9	__	_____	_____	_____	_____	_____	Yes No	Yes No	Yes No
10	__	_____	_____	_____	_____	_____	Yes No	Yes No	Yes No

[1] Use the following codes to designate the design capacity:

A	< 10,000 gallons
B	10,000 gallons to 100,000 gallons
C	100,000 gallons to 1,000,000 gallons
D	> 1,000,000 gallons

[2] Use treatment/recovery type code shown in Question 7.5.

[3] Yearly cost, including operation and maintenance costs, to dispose of these residuals in this manner.

[4] Treatment train from which wastewater is discharged under a NPDES permit or through a sewer system to a publicly-owned treatment works.

[5] Secondary containment is provided when the tank is located inside a dike area where the volume of liquid that the diked area can contain is at least equivalent to the capacity of the largest tank (only one example).

8.2 Storage or Treatment in Containers[6]

Have identified residuals been stored or treated on-site in containers at any time in 1991? Yes __ No __

If yes, provide the following information (if the facility has several container storage areas, provide information only on the primary container storage area):

8.2.1 Check typical and maximum quantity stored on any day in 1991 for each residual:

RIN	Average Daily Quantity[1]	Average Maximum Daily Quantity	Storage or Treatment (specify)	Length of Storage	Cost[2]	Treatment/ Recovery Type Code[3]

[1] Use the following codes to designate the quantity of residual(s) in storage on any day in 1991:
A < 550 gallons
B 550 gallons to 5,500 gallons
C 5,500 gallons to 55,000 gallons
D > 55,000 gallons

[2] Yearly cost, including operation and maintenance costs, to dispose of these residuals in this manner.

[3] Use treatment/recovery type code shown in Question 7.5.

8.2.2 Identify the storage area base material:

__ Concrete __ Asphalt __ Soil __ Other (specify) _____

8.2.3 If liquid residuals or residuals containing free liquids are stored, is the storage area designed and operated to collect and contain surface runoff?

__ Yes __ No __ Liquids are not stored

[6] Container means any portable device in which residuals were stored, treated, or otherwise handled.

8.3 Storage or Treatment in Piles

Have identified residuals been stored or treated in on-site piles at any time in 1991? Yes __ No __

If yes, provide the following information:

8.3.1 Provide the following information for the 10 largest piles:

Pile	RIN	Storage/ Treatment (specify)	Treatment/ Recovery Type Code[1]	Typical Quantity[2] Managed	Cost[3]	Under Roofed Structure (Circle)	Containment[4] Provided (Circle)	Synthetic[5] Liner Base (Circle)	Permitted for Hazardous Waste
1	___	_____	_____	_____	_____	Yes No	Yes No	Yes No	Yes No
2	___	_____	_____	_____	_____	Yes No	Yes No	Yes No	Yes No
3	___	_____	_____	_____	_____	Yes No	Yes No	Yes No	Yes No
4	___	_____	_____	_____	_____	Yes No	Yes No	Yes No	Yes No
5	___	_____	_____	_____	_____	Yes No	Yes No	Yes No	Yes No
6	___	_____	_____	_____	_____	Yes No	Yes No	Yes No	Yes No
7	___	_____	_____	_____	_____	Yes No	Yes No	Yes No	Yes No
8	___	_____	_____	_____	_____	Yes No	Yes No	Yes No	Yes No
9	___	_____	_____	_____	_____	Yes No	Yes No	Yes No	Yes No
10	___	_____	_____	_____	_____	Yes No	Yes No	Yes No	Yes No

[1] Use treatment/recovery type code shown in Question 7.5.

[2] Use the following codes to designate the typical quantity of residuals contained in the pile on any day in 1991:

A < 20 cubic yards
B 20 to 200 cubic yards
C 200 to 2,000 cubic yards
D 2,000 to 20,000 cubic yards
E > 20,000 cubic yards

[3] Yearly cost including operation and maintenance costs to dispose of these residuals in this manner.

[4] Containment is provided when the pile base is designed, operated, and maintained to contain leachate and run-off.

[5] Is a synthetic liner installed in the pile base? Waste may lie directly on synthetic liner or the liner may be covered with a clay layer.

8.4 Burning in a Boiler or Industrial Furnace

Have identified residuals been burned in an on-site boiler or industrial furnace at any time in 1990 or 1991?

Yes __ No __

If yes, provide the following information for the most recent year for each burner and indicate the specific type:

Boiler (e.g., non-industrial, industrial, or utility) ____, or kiln (e.g., cement or light-weight aggregate) ____, or Industrial Furnace (e.g., Halogen Acid Furnace; smelting, melting, or refining furnace) ___.

8.4.1 Burner and fuel type:

Type	**Burner Capacity (Heat input in BTU/hr)**	**Primary Burner Fuel**
__ Fire Tube	__ < 10 million	__ Oil
__ Water Tube	__ 10 million to 100 million	__ Gas
	__ > 100 million	__ Coal
		__ Wood or other

Percentage of Fuel Replaced by Residuals (Heat Input Basis)	**Typical Burner Load When Firing Residual (% of Capacity)**	**Burner Temperature (°C)**
___ < 5%	___ < 50%	Inlet ____
___ 5 –10%	___ 50 –75%	Outlet ____
___ 10 –25%	___ > 75%	
___ 25 –50%		
___ > 50%		

8.4.2 What is the current annual operating capacity of the boiler/industrial furnace (ton/yr)?

_____

8.4.3 What is the maximum annual design capacity for the boiler/industrial furnace (ton/yr)?

_____

8.4.4 Provide the following information for each of the residuals burned:

RIN	**Typical Feed Rate (lbs/hr)**	**Typical BTU Content (BTU/lb)**	**Typical Total Ash Content (% by wt.)**	**Halogen Content (% by wt.)**	**Total Water Content (% by wt.)**
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

8.4.5 Provide the following information on the total feed mixture when residual is burned:

Feed Rate (pounds per hour) _____
Typical BTU Content (BTU/lb) _____
Typical Total Ash Content (% by wt.) _____
Typical Total Halogen Content (% by wt.) _____
Typical Total Water Content (% by wt.) _____

8.4.6 If the burner is equipped with an air pollution control device, specify the type of device:

____ Scrubber
____ Electrostatic precipitator
____ Other (specify)_____

8.4.7 Are residual-burning stack emissions data available? __ Yes __ No

8.4.8. Provide the yearly cost including operation and maintenance costs to dispose of these residuals in this manner in the space below.

_____
_____
_____
_____

8.4.9 Is the burner permitted, or in the process of being permitted, to burn hazardous waste under the Burner and Industrial Furnace (BIF) rule?

Yes ___ No ___

If not, and the subject wastes become hazardous, would your facility consider applying for a permit to burn hazardous waste under the BIF rule?

Yes ___ No ___

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8.5 Incineration

Have identified residuals been incinerated on-site at any time in 1991? Yes __ No __

If yes, provide the following information for each incinerator:

8.5.1 Incinerator type:

Type	**Incinerator Capacity (Heat Input in BTU/hr)**	**Feed Type**	**Percentage Auxiliary Fuel Required (Heat Input Basis)**
___ Liquid Injection ___ Rotary kiln ___ Hearth ___ Other _____ (specify)	__ < 10 million __ 10 million to 100 million __ > 100 million	__ Liquid-nozzle type _____ (specify) __ Atomizing pressure _____ (specify) __ Solid __ Batch charge __ Continuous charge	_____

8.5.2 What is the current annual operating capacity of the incinerator (ton/yr)?

_____

8.5.3 What is the maximum annual design capacity of the incinerator (ton/yr)?

_____

8.5.4 Combustion Chamber Design Parameters:

	Primary Chamber	**Secondary Chamber**
Combustion Chamber Temp.	_____ °C	_____ °C
Location of Temp. Monitor	_____	_____
Residence Time	_____(sec)	_____ (sec)

8.5.5 If the incinerator is equipped with an air pollution control device, specify the type of device:

___ Scrubber
___ Electrostatic precipitator
___ Other (specify) _____

8.5.6 Are incinerator stack emissions data available? __ Yes __ No

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8.5.7 Provide the following information for each of the residuals burned:

RIN	Typical Feed Rate (lbs/hr)	Typical BTU Content (BTU/lb)	Typical Total Ash Content (% by wt.)	Halogen Content (% by wt.)	Total Water Content (% by wt.)
___	_____	_____	_____	_____	_____
___	_____	_____	_____	_____	_____
___	_____	_____	_____	_____	_____
___	_____	_____	_____	_____	_____

8.5.8 Provide the yearly cost, including operation and maintenance costs, to dispose of these residuals in this manner.

_____

_____

_____

_____

_____

8.5.9 Is this incinerator permitted for management of hazardous wastes?

Yes __ No __

If yes, please list the permitted hazardous wastes.

_____

_____

_____

_____

8.6 Land Treatment

Have identified residuals been managed in an on-site land treatment operation at any time in 1991? Yes __ No __

If yes, provide the following information:

8.6.1 Are the land treatment units permitted for management of hazardous waste generated on-site?

Yes __ No __

8.6.2 Year land treatment initiated at site: _____

8.6.3 Year land treatment of identified residuals initiated: _____

8.6.4 Have residuals other than identified residuals been land treated at any time in 1991?

Yes __ No __

8.6.5 What was the total area actively used for land treatment in 1991?

_____ acres

8.6.6 What is the average slope of the land treatment site?

_____ percent

8.6.7 What is the type and percent of vegetative cover?

type _____ percent _____

8.6.8 Is surface water run-off from the site collected for treatment, re-application to the site, or analyzed prior to discharge?

Yes __ No __

8.6.9 Check method(s) used to apply residuals to the land treatment site:

a) ___ Surface spreading or spray irrigation without plow or disc incorporation. Indicate residuals applied in this manner using Residual Identification Numbers (RIN) and quantity of each: _____

b) ___ Surface spreading or spray irrigation with plow or disc incorporation to a depth of _____ (specify). Indicate residuals applied in this manner using RIN and quantity of each: _____

c) ___ Subsurface injection to a depth of _____ (specify). Indicate residuals applied in this manner using RIN and the quantity of each: _____

d) ___ Other methods (specify methods, RINs and quantities): _____

8.6.10 Is soil core monitoring performed? Yes __ No __

8.6.11 Is soil pore water monitoring performed? Yes __ No __

8.6.12 Provide the yearly costs, including operation and maintenance costs, for disposing these residuals in this manner in the space below.

8.7 Surface Impoundments[7]

Have identified residuals been stored, treated, or disposed of in an on-site surface impoundment at any time in 1991?

Yes __ No __

If yes, provide the following information:

8.7.1 Total number of on-site impoundments _____

8.7.2 Provide the information requested in Table VIII on the following page. If more than 6 surface impoundments have been used in 1991 to manage identified residuals, provide information only on the 6 impoundments with the largest capacities. Use Residual Identification Numbers (RIN) to identify residuals. If you do not know whether a liner has been installed, circle both "Yes" and "No." If you do not know the thickness of a liner, indicate "UNK" for unknown.

8.7.3 Total size of surface impoundments: _____ acres

8.7.7 Do you plan to close any surface impoundments?

Yes __ No __

If yes, will tanks be installed to replace the surface impoundment(s)?

Yes __ No __

If yes, will wastes be removed from the surface impoundment(s)

Yes __ No __

If yes, provide the expected volume of wastes and their type (e.g., sludge, soil, etc.)

_____

_____

8.7.8 Are any surface impoundments closed? If yes, provide the volume of waste, type of waste, and year the impoundment was closed in the space below.

_____

_____

_____

_____

_____

[7] A surface impoundment is defined as holding, storage, settling, and aeration pits, ponds, or lagoons formed primarily of earthen materials.

Table VIII — Response to Question 8.7.2

Impoundment	Residuals Disposed (RIN)	Total Capacity (Gallons)[1]	Storage or Treatment (specify)	Specify Treatment/ Recovery Type if Applicable[2]	Cost[3]	Synthetic Liner			Clay Liner			Leachate Collection System			
						Installed	Thickness (in)	No. of Liners	Installed	Thickness (in)	No. of Liners	System Installed		Leachate Generated	
1						Yes No			Yes No			Yes	No	Yes	No
2						Yes No			Yes No			Yes	No	Yes	No
3						Yes No			Yes No			Yes	No	Yes	No
4						Yes No			Yes No			Yes	No	Yes	No
5						Yes No			Yes No			Yes	No	Yes	No
6						Yes No			Yes No			Yes	No	Yes	No

Surface Area of Impoundments:

Impoundment	Surface Area
1	
2	
3	
4	
5	
6	

RCRA Status:

Impoundment	Permitted for Hazardous Waste	
1	Yes	No
2	Yes	No
3	Yes	No
4	Yes	No
5	Yes	No
6	Yes	No

Minimum Technological Requirement (MTR) Status:

Impoundment	Meets MTR		Retrofit Planned		Waiver Request Planned	
1	Yes	No	Yes	No	Yes	No
2	Yes	No	Yes	No	Yes	No
3	Yes	No	Yes	No	Yes	No
4	Yes	No	Yes	No	Yes	No
5	Yes	No	Yes	No	Yes	No
6	Yes	No	Yes	No	Yes	No

[1] Use the following code to designate the quantity of residual(s) in storage on any day in 1991:

A	< 550 gallons
B	550 to 5,500 gallons
C	5,500 to 55,000 gallons
D	> 55,000 gallons

[2] Use treatment/recovery type code shown in Question 7.5.

[3] Provide the yearly cost, including operation and maintenance costs, to dispose of the residuals in this manner.

8.8 Landfills

8.8.1 Have identified residuals been landfilled on-site at any time that you owned or operated this facility? Yes __ No _

If yes, answer Questions 8.8.2, 8.8.3, and 8.8.4.

8.8.2 Has any on-site landfill (or landfill cell) that was used to dispose of identified residuals been closed (i.e., no longer used to dispose of waste)? Yes __ No __

If yes, complete Table IX.

8.8.3 Have any identified residuals been landfilled on-site at any time in 1991 in a cell that has not been closed? Yes __ No __

If yes, complete Table X.

8.8.4 Are the landfills permitted for management of hazardous waste generated on-site?

Yes __ No __

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Table IX — Response to Question 8.8.2

Closed Landfill Cells

If more than 5 cells containing identified residuals have been closed, provide information only on the 5 cells that were most recently closed. Use Residual Identification Numbers (RIN) to identify residuals.

		Quantities and Costs		
Cell	Designed or Permitted Capacity	Residuals Disposed (RIN)	Quantity Disposed[1]	Cost[2]
1				
2				
3				
4				
5				

[1] Use the following codes to designate the typical quantity of residuals contained in the pile on any day in 1991:

A < 20 cubic yards
B 20 to 200 cubic yards
C 200 to 2,000 cubic yards
D 2,000 to 20,000 cubic yards
E > 20,000 cubic yards

[2] Yearly cost, including operation and maintenance costs, to dispose of these residuals in this manner.

Cap/Cover Design

If you do not know whether a layer or liner was installed, circle both "Yes" and "No." If you do not know the thickness of a layer or liner, indicate "UNK" for unknown.

		Cap Design / Drainage Layer			Clay Layer		Synthetic Liner		
Cell	Residuals Disposed (RIN)	Installed	Material	Thickness (in)	Installed	Thickness (in)	Installed	Material	Thickness (in)
1		Yes No			Yes No		Yes No		
2		Yes No			Yes No		Yes No		
3		Yes No			Yes No		Yes No		
4		Yes No			Yes No		Yes No		
5		Yes No			Yes No		Yes No		

Table IX (continued)

Bottom Liner Design/Leachate Collection

	Synthetic Layer			Clay Layer			Leachate Collection System	
Cell Number (as assigned above)	Installed	Thickness (in)	No. of Liners	Installed	Thickness (in)	No. of Liners	Installed	Leachate Generated
1 _____	Yes No	_____	_____	Yes No	_____	_____	Yes No	_____
2 _____	Yes No	_____	_____	Yes No	_____	_____	Yes No	_____
3 _____	Yes No	_____	_____	Yes No	_____	_____	Yes No	_____
4 _____	Yes No	_____	_____	Yes No	_____	_____	Yes No	_____
5 _____	Yes No	_____	_____	Yes No	_____	_____	Yes No	_____

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Table X — Response to Questions 8.8.3

Landfill Cells Used to Dispose of Identified Residuals at any Time In 1991

If more than 5 cells have been used in 1991 to dispose of identified residuals, provide information only on the 5 containing the greatest quantities of residuals. Use Residual Identification Numbers (RIN) to identify residuals.

Quantities and Costs

Cell	Designed or Permitted Capacity	Residuals Disposed (RIN)	Quantity Disposed[1]	Cost[2]	Permitted for Hazardous Waste
1					Yes No
2					Yes No
3					Yes No
4					Yes No
5					Yes No

[1] Use the following codes to designate the typical quantity of residuals contained in the pile on any day in 1991:
A < 20 cubic yards
B 20 to 200 cubic yards
C 200 to 2,000 cubic yards
D 2,000 to 20,000 cubic yards
E > 20,000 cubic yards

[2] Yearly cost, including operation and maintenance costs, to dispose of these residuals in this manner.

Bottom Liner Design/Leachate Collection

If you do not know whether a liner has been installed, circle both "Yes" and "No." If you do not know the thickness of a liner, indicate "UNK" for unknown.

		Synthetic Layer				Clay Layer			Leachate Collection System	
Cell	Residuals Disposed (RIN)	Installed	Material	Thickness (in)	No. of Liners	Installed	Thickness (in)	No. of Liners	Installed	Leachate Generated
1		Yes No				Yes No			Yes No	
2		Yes No				Yes No			Yes No	
3		Yes No				Yes No			Yes No	
4		Yes No				Yes No			Yes No	
5		Yes No				Yes No			Yes No	

8.9 Deep Well Injection

8.9.1 Were deep well injection operations used for disposal of chlorinated aliphatic waste in 1991? Yes __ No __

If yes, provide information on all chlorinated aliphatic wastes land disposed by deep well injection on-site as indicated below:

Table XI – Response to Questions 8.9

Well #	RIN	Quantities disposed	Is well monitored for leakage?	Monitoring type	Spillage prevention system	Formation used and depth	Is waste pre-treated?	Are brine or acids co-injected with waste?	Cost[1]	Permitted for Hazardous Waste?

[1] Provide yearly cost, including operation and maintenance costs, to dispose of the waste in this manner.

9. OPTIONAL: Source Reduction Efforts

Your response to this section is optional. You may choose not to answer any or all questions in this section and you would fulfill your obligation under RCRA Section 3007.

The U.S. Environmental Protection Agency is interested in knowing what types of source reduction activities are currently being implemented in industry and what barriers are faced by industry in implementing these activities. If you choose to respond, this information will be used in future regulatory development efforts to find ways to expand the opportunities for, and encourage, waste minimization.

The following questions concern source reduction efforts at your facility (both successful and unsuccessful). Source reduction refers to the reduction or elimination of waste or residuals at the source, usually within a process. The term includes equipment or technology modifications; process or procedure modifications; reformulation or redesign of products; substitution of raw materials; and improvements in housekeeping, maintenance, training, or inventory control.

9.1 Has your facility voluntarily prepared and implemented a formal pollution prevention/waste minimization plan? If so, briefly explain the objectives and extent implemented (0%, 25%, 50%, 75%, 100%)?

List waste streams which have been identified as candidates for source reduction but for which no source reduction efforts have been initiated.

9.2 If there are barriers to implementing pollution prevention at your facility (e.g., management, procedures, funding, technical/RD&D, regulatory barriers, apathy), please describe them.

9.3 Please complete Table XII for any source reduction practices initiated at your facility in the last five years that have resulted in significant reductions in residuals or changes in quantities of raw materials used or released to the environment. The table requires the information listed below, and an example is provided on the following page (see Example VI).

- Residual(s) affected and RIN (if applicable)
- Annual volume of residual generated before and after source reduction was implemented
- Description of source reduction activity
- Concentrations of known or expected constituents in residual before and after source reduction was implemented
- Stage of development of the source reduction technique (e.g., pilot stage or fully implemented)
- Date the activity began (and ended, if applicable)
- Costs associated with the activity, including up-front investment and operation/maintenance costs

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[OPTIONAL]
EXAMPLE VI– Response to Question 9.3
Table XII

OPTIONAL: Source Reduction Project Description

Unit(s) Affected: Oil/Water Separator

Residuals Affected (RIN): 8

Project dates:
Date approved 9/88
Date completed 2/89
Present % of completion 100%

Project Description:

Removal of oil phase from oil/water separator and return to process feed as raw material.

Project Impact:

	Constituent Name	Before	After
Volume (tons/yr)		50	0
Concentration (vol%)			

Financial Information:

Investment ($): $20,000
Maintenance ($/yr): $2,000

Savings ($/yr): $10,000

Please describe the basis savings: Savings based on reduced waste disposal cost. Waste volume is reduced by 50 tons/yr for the @ disposal cost of $200/ton.

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[OPTIONAL]
Table XII – Response to Question 9.3

OPTIONAL: Source Reduction Project Description

Unit(s) Affected: _____

Residuals Affected (RIN): _____

Project dates:
Date approved _____
Date completed _____
Present % of completion _____

Project Description:

_____
_____
_____

Project Impact:

	Constituent Name	Before	After
Volume (ton/yr)		_____	_____
Concentration (vol%)	_____	_____	_____
	_____	_____	_____

Financial Information:

Investment ($): _____
Maintenance ($/yr): _____

Savings ($/yr): _____

Please describe the basis for the savings: _____
_____

copy as needed

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10. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information contained herein, and that based on my inquiry of those responsible for obtaining the information, I believe the above to be true and complete, and I am aware that there are substantial penalties for submitting false information.

Signature .....

Date..... Telephone .....

Name (print) .....

Title .....

Authority for the collection of the above information is contained in the Resource Conservation and Recovery Act, 42 USC 6901 et seq.

U.S. Environmental Protection Agency

Space to Provide Additional Information Regarding the Questionnaire